

Egg Fruit (*Pouteria campechiana*): A Review**Jasmitha B. G.**

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SUMMARY

Pouteria campechiana or canistel is a tropical fruit and a member of Sapotaceae family. This fruit is a native plant to Central America region, namely the Bahamas, Belize, El Salvador, Guatemala, and Southern Mexico. The distribution is well spread around the region including Nicaragua, Costa Rica, Panama, Puerto Rico, Jamaica, and Cuba. Previously the spread was as far south as to reach Brazil. In the United States, this fruit was introduced in Florida. *Pouteria campechiana* was found to be rich in secondary metabolites and may have used for treating several diseases. The higher vitamin C content compared to other dried fruits indicates its potential as an effective free radical scavenger.

INTRODUCTION

Pouteria campechiana or canistel is a tropical fruit and belongs to the family Sapotaceae. It is a native to the southern parts of Mexico in the Yucatan Peninsula. Canistel is distributed well around the region including Nicaragua, Costa Rica, Panama, Puerto Rico, Jamaica, and Cuba. When the fruit introduced to India isn't exactly known, though it was likely around the time the Philippines received the fruit in 1924. Eggfruit's popularity is limited to the regions of its origin, as it's not well known in Europe and in most countries in Asia. Eggfruit cultivated in Maharashtra throughout the Western Ghats, Kerala, limited parts of Tamil Nadu, and it's also a hobby fruit in a few gardens of Auroville. The fruit does not have any serious farming efforts, and it generally sulks in the shadow of its immensely popular brother, the sapota. Ecologically, canistel needs a tropical or subtropical climate to grow, however, it is found to survive in the colder climate of north Florida, and in California region. The tree can grow at sea level altitude of 1400 m elevations. It needs a moderate precipitation, and able to tolerate well a long hot dry season such as that seen in the South Asia region (Lim, 2012). Canistel has a high tolerance to various soil types, the soil types needed for canistel growth ranged from acidic sandy to limestone sandy soil. Distribution and cultivation of this fruit is widespread to many countries, and often sold in the markets, thus the common names of this fruit are assigned based on the yellowish to yellow colored flesh, the shape, and also the taste and texture of the aril. In English this fruit is known as yellow sapote, egg fruit, and canistel while in Spanish speaking Central and South American countries, this fruit is known as zapote, mamey, sapota, amarillo, fruta de huevo, custiczapoti, ti-es and cucuma due to the texture of the ripen pulp is buttery and the milky taste. The canistel is a drupe with single seed, wrapped inside fleshy aril or pulp (Atapattu and Mendis, 2013).



The canistel is a monopodial tree that stands tall, between 8 and 30 m from the ground. The trunk is slender in physique with diameter up to 1 m, furrowed bark, and like any other member of Sapotaceae family, the trunk contains rubbery white latex. It has a spreading crown, with velvet brown young branches, alternate evergreen leaves, leaves are ranged from oblong lanceolate to obviate with blunt apex. Flowers are bisexual, fragrant, solitary or in small clusters, 5 to 6 lobed, cream colored, and with silky hairs (Morton, 1987).

Fruit Characteristics

The fruit is variable in shape with uneven bulged, from round to egg shaped, nearly round, oval, ovoid or spindle shaped. Length varies from 7 to 12.5 cm, and width from 5 to 7.5 cm. Young fruit has green skin, leathery textured peel, and contains latex. The flesh of young fruit is hard to gummy with a bitter and sour taste. Ripen or matured fruit has yellowish to yellow colored skin, soften texture peel, and the aril of matured fruit is soft with few fine fibers and creamy, with a sweet taste. Freestone seeds range in size from 5 to 7.5 cm long (Elsayed *et al.*, 2016). Fruit pulp thickness makes up 77.11% of total fruit weight. Seeds and peel made approximately 16.5% and 6.39% of total fruit weight. It has the highest moisture recorded for seeds, containing 50.17% of moisture. Meanwhile pulp and peel composed 46.1% and 48.8% of moisture, respectively.



Chemical Composition and Nutritional Values

The chemical composition of *P. campechiana* has been investigated in terms of selected phytochemical components. It is reported that, the fruit juice contains antioxidant, antinitrosative, and antimutagenic qualities. Leaves were found to have six stilbenes and six flavonoid glycosides, these compounds were identified having antimutagenic activity. Meanwhile the fruit is an essential source of plant carotenoids, total carotenoid content in fruit was varied from 1.9 to 23.5 mg/g dry weight (DW). Elsayed *et al.* (2016) supported the use of egg fruit in traditional medicine for conditions related to inflammation, pain, and peptic ulcers. They found ethanolic extract of the canistel seeds had arresting effect on inflammation, and ethanolic extract of the leaves showed analgesic activity. Canistel is a fruit loaded with carbohydrates, vitamin C, vitamin B, and minerals, such as calcium, phosphorus, and iron. Neoxanthin was found as the most abundant carotenoid in the canistel, and the total carotenoids content varied from 1.9 to 23.5 mg/g DW (De Lanerolle *et al.*, 2008).

Sensory Characteristics

The young fruit of canistel has greenish mesocarp with sticky latex, and often has a bitter sour taste. The ripened fruit mesocarp turns from yellowish to creamy yellow color. Matured canistel is often eaten fresh as a dessert fruit, and its fleshy pulp has a buttery or creamy texture, sweet and milky taste. The consistency of ripened canistel pulp quality is similar to a hard boiled yolk (De Lanerolle *et al.*, 2008; Lim, 2012; Atapattu *et al.*, 2014).

Harvest Season

Egg fruit is often cultivated in home gardens in Sri Lanka, India, Malaysia, and the Philippines as a fruit tree. The mature period for this fruit varies from one locality to the another; in Sri Lanka the fruiting season is from September to February, meanwhile in Mexico, the blooming period is from June to February, and in Cuba the flowering starts in April and May and main fruiting season is from October and February (Orwa *et al.*, 2009). Egg fruit season in India is June through July. Farmers have to pick individual ripe fruits off the tree, as they do not ripen uniformly. Estimated annual production of a tree can produce fruits up to 136 to 250 kg/year and the weight of a fruit is about 175 g (Atapattu *et al.*, 2014).

Post Harvest

Canistel is often eaten fresh as a dessert fruit, and also as fruit salad with condiments such as salt, pepper, lime juice, or mayonnaise. The pureed of canistel can be added to cake or icecream as flavor and used as filling for pie. This fruit is also used in drinks, fresh pressed juice, milkshake, or eggnog. The blended drink is enriched with milk and sugar, flavored with vanilla, nutmeg, and spices. The pulp can be dried, make into powder, and use in pudding mixes (Lim, 2012). The ripened pulp can be mashed, flavored with sugar, heated, and prepared as butter or a spread (Morton, 1987). Additional to the use of the fruit, the latex of canistel tree has been used as material in production of traditional chewing gum in Central America (Lim, 2012). In Sri Lanka, canistel fruit meal is used as a poultry feed to enhance growth performance and carcass parameters in broiler chickens (Atapattu *et al.*, 2014). The grown tree has been used as a shed for coffee plant, for shelter and it can be exploited as timber and wood plank as building material for house frames, cart, or furniture (Lim, 2012). The bark of the tree can be simmered and the mixture has been used as antipyretic medication to lessen fever in Mexico, and in Cuba it has been used to treat skin blisters or soreness (Orwa *et al.*, 2009).

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